/ Perfect Welding / Solar Energy / Perfect Charging

Fronius
SHIFTING THE LIMITS



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FRONIUS HIGH PERFORMANCE WELDING

HIGH PRODUCTIVITY SOLUTIONS FOR CONSTRUCTION AND ASSEMBLY

Question - What is the the most unique way to join thicker or thiner materials with a repeatable Mig welding process?

/ Solution: Fronius TWIN Cold Metal Transfer (CMT)

What are the advantages of CMT TWIN ?

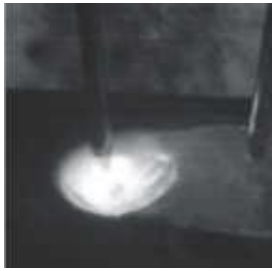
- Incorporated wire motion
- Precision process control with the least amount of spatter
- Extremely low thermal input
- Extremely stable arc

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CMT TWIN



- / Simple system layout
- / Synchronised start of two individually controlled power sources
- / Two wire electrodes and one gas nozzle combined with the CMT process
- / Unbeatable arc stability
- / Deep fusion penetration
- / Ideal weld seam formation
- / Low-spatter welding
- / Energy efficient power sources







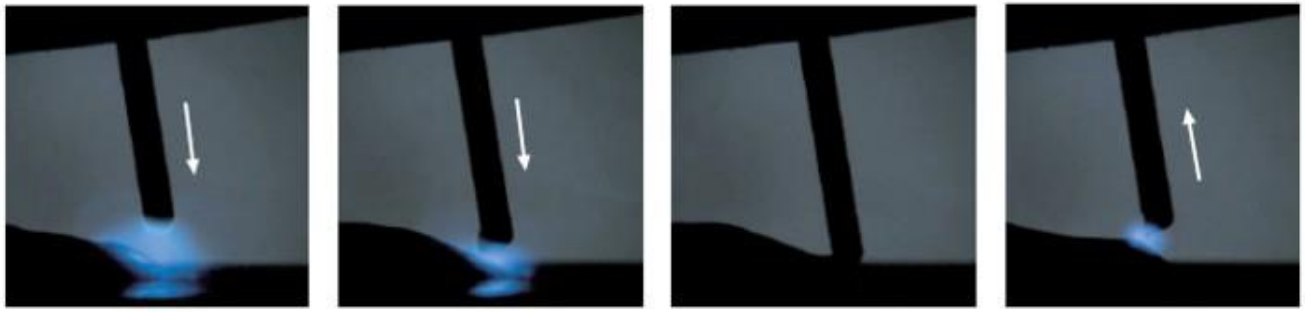
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CMT TWIN PROCESSES

/ Higher welding speed = Increased Productivity = Faster Returns on Investments
/ Reliable and proven communications can be adapted to robotic or automation applications
/ Reproducable welding with spatter free ingnition
/ Fronius 3 in 1 multi process powersource a) Standard b) Pulse c) CMT
/ Combining CMT and Pulse welding as one process for effective penetration
/ PURE CO2 can be used with mild steel where applicable

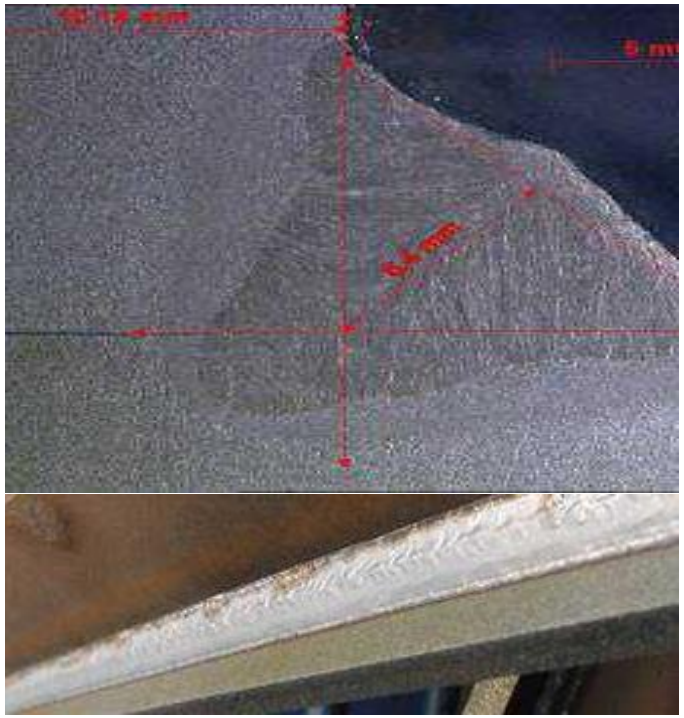
How does CMT work ?

/ A single incorporated wire movement as shown below:



/ Droplet detachment in the short circuit

APPLICATION 1: STRUCTURAL SUPPORT BEAMS



Goal: Reproduceable welds with low spatter and low distortion

Requirements:

- 10 mm material thickness, 4m lengths – Mild Steel
- a6.0 fillet weld requirement
- PB welding position with automated process

Solution : CMT Twin Wire System on a Fronius Flex Track

- a6.4mm fillet weld achieved
- Welding speed **66 cm/min**
- 1.2 mm wire diameter
- No Spatter
- Low distortion compared to single wire manual mig welding
- Leading wire process / Speed
  - Process: **Pulse**
  - Vd: 14.5 m/min / **7.7kg/hr**
- Trailing Wire process / Speed
  - Process: **CMT**
  - Vd: 9.5 m/min / **5,1kg/hr**

APPLICATION 2: HIGH SPEED TWIN WIRE WELDING



Goal: Maximize Production Speed / Least amount of Spatter

Requirements:

- 1.5 mm material thickness, 447mm length – Chrome Nickel

Solution : CMT Twin Wire system on a Robot

Results achieved:

- Welding travel speed **6m/min = 100 mm/sec**
- 1.0 mm wire diameter
- Low distortion compared to single wire Mig Welding
- **No Spatter**
- Leading wire process / Speed
  - Process: **Pulse**
  - Vd: **17.0 m/min**
- Trailing Wire process / Speed
  - Process: **CMT**
  - Vd: **11.0 m/min**

SUMMARY OF HIGH PERFORMANCE WELDING

Demanding industries today, where CMT Twin is applicable :

- / Shipbuilding
- / Automotive
- / Yellow Goods
- / Offshore
- / Rail and Heavy Transportation
- / Structural / Towers
- / Container Construction

Applciaiton materials include: Duplex Steel, Stainless Steel, Mild Steel and Aluminium

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